CLAIMS

What is claimed is:

1. A data channel tuner comprising:

an input interface for accepting said data channel, wherein said input interface further accepts signal energy at a frequency associated with an image of said data channel as mixed by said tuner; and

an image reject mixer coupled to said input interface and providing frequency conversion of said data channel.

2. The tuner of claim 1, wherein signal energy of said data channel is approximately 20 dB lower in amplitude than said image frequency signal energy.

3. The tuner of claim 2, further comprising:

an output interface coupled to said image reject mixer providing said frequency converted data channel having a signal to noise and distortion of approximately 20 dB.

4. The tuner of claim 3, further comprising:

a filter network coupled to said image reject mixer, wherein said filter network provides approximately 20 dB of rejection of said image frequency signal energy, and wherein said image reject mixer provides approximately 20 dB of rejection of said image frequency signal energy.

5. The tuner of claim 1, further comprising:

a filter network coupled to said image reject mixer.

6. The tuner of claim 5, wherein said filter network utilizes only first order filters.

7. The tuner of claim 6, wherein said filter network comprises 2 first order filters.

8. The tuner of claim 5, further comprising:

at least one amplifier disposed in a signal path between a filter of said filter network and said image reject mixer.

9. The tuner of claim 8, wherein said at least one amplifier and said image reject mixer are implemented using integrated circuit technology on a same substrate to thereby provide a highly integrated tuner circuit.

10. The tuner of claim 9, wherein said filter network is implemented using integrated circuit technology on said same substrate to thereby provide a substantially completely integrated tuner circuit.

11. The tuner of claim 1, wherein said image frequency signal energy is at a frequency approximately 10% removed from a frequency of said out-of-band channel.

12. The tuner of claim 11, wherein said image frequency signal energy is a frequency of approximately 142 MHz.

13. The tuner of claim 12, wherein said frequency of said data channel is approximately 130 MHz.

14. The tuner of claim 11, wherein said data channel is in the range of from approximately 70 MHz to 130 MHz, said frequency converted data channel is in the range of from approximately 36 MHz to 45 MHz, and said image frequency signal energy is in the range of from approximately 142 MHz to approximately 220 MHz.

15. The tuner of claim 1, wherein said data channel comprises a forward data channel and said image frequency signal energy comprises a forward access terminal signal.

16. The tuner of claim 1, wherein said data channel comprises a digital data stream.

17. A system for providing tuning of a particular signal in a signal stream including additional signal energy at an image frequency of said particular signal as frequency converted by said system, said system comprising:

an image reject mixer providing frequency conversion of said particular signal and rejection of said additional signal energy, wherein a signal energy of said particular signal is substantially less than said additional signal energy.

18. The system of claim 17, wherein said particular signal and a signal corresponding to said additional signal energy are separated in frequency by approximately a 10% frequency difference.

19. The system of claim 17, further comprising:

a first filter providing coarse rejection of said additional signal energy, wherein said first filter is a first order filter; and

a second filter coupled to said first filter and providing less coarse rejection of said additional signal energy, wherein said second filter is a first order filter.

20. The system of claim 19, wherein said first and said second filters provide approximately 20 dB of signal rejection and said image reject mixer provides approximately 20 dB of signal rejection.

21. The system of claim 19, wherein said first and second filters are the only filters utilized by said system in a signal path prior to said image reject mixer.

22. The system of claim 19, wherein said image reject mixer is implemented as an integrated circuit, and wherein at least one of said first and second filters is implemented as an integrated circuit on a common substrate as said image reject mixer.

23. The system of claim 17, wherein said additional signal energy as present in said signal stream is approximately 20 dB above said particular signal as present in said signal stream.

24. The system of claim 23, wherein a frequency converted said particular signal output by said image reject mixer has a signal to noise and distortion of approximately 20 dB.

25. The system of claim 17, wherein said image reject mixer is implemented as an integrated circuit.

26. The system of claim 17, wherein said particular signal comprises a forward data channel and said additional signal energy is associated with a forward access terminal signal.

27. The system of claim 17, wherein a frequency of said additional signal energy is in the range of approximately 142 MHz to 220 MHz.

28. The system of claim 27, wherein a frequency of said particular signal is in the range of approximately 70 MHz to approximately 130 MHz.

29. A method for tuning a particular signal from a signal stream, said method comprising:

providing said signal stream having a first signal and a second signal both utilized substantially simultaneously by a subscriber station, wherein said second signal is offset from said first signal such that said second signal corresponds to an image frequency of said first signal; and

mixing said signal stream using an image reject mixer to provide a frequency converted said first signal substantially without said second signal.

30. The method of claim 29, wherein said first signal comprises a forward data channel and said second signal comprises an application channel.

31. The method of claim 29, further comprising:

filtering said signal stream to provide relatively coarse filtering of said second signal prior to said mixing said signal stream.

32. The method of claim 31, wherein said filtering comprises:

coarsely filtering said signal stream using a first first order filter; and

less coarsely filtering said signal stream using a second first order filter.

33. The method of claim 29, wherein said first signal is approximately 20 dB down from said second signal.

34. A method for providing tuning of a data channel in a signal stream having an application signal offset from said data signal such that said application signal corresponds to an image frequency of said data signal, said method comprising:

filtering said signal stream to provide relatively coarse filtering of said application signal; and

mixing said filtered signal stream using an image reject mixer to provide a frequency converted said data channel substantially without said application signal.

35. The method of claim 34, wherein said filtering comprises:

coarsely filtering said signal stream using a first first order filter; and

less coarsely filtering said signal stream using a second first order filter.

36. The method of claim 34, wherein a signal of said data channel is approximately 20 dB down from said application signal.

37. The method of claim 36, wherein said filtering provides approximately 20 dB of signal rejection with respect to said application signal and said mixing provides approximately 20 dB of signal rejection with respect to said application signal.

38. The method of claim 37, wherein said frequency converted data channel has a signal to noise and distortion of at least 20 dB.

39. A method for providing tuning of a signal of interest appearing in a signal stream including said signal of interest and a signal at an image frequency of said signal of interest, said method comprising:

providing said signal stream to a tuner circuit including an image reject mixer, wherein said image frequency signal as provided to said tuner circuit is substantially greater in amplitude than said signal of interest; and

mixing said signal stream using said image reject mixer to provide a frequency converted said signal of interest substantially without said image frequency signal.

40. The method of claim 39, further comprising:

filtering said signal stream by said tuner circuit to provide approximately 20 dB of filtering of said image frequency signal.

41. The method of claim 39, wherein said filtering comprises:

coarsely filtering said signal stream using a first first order filter; and less coarsely filtering said signal stream using a second first order filter.

42. The method of claim 39, wherein said signal of interest is offset from said image frequency signal by approximately a 10% frequency difference.

43. The method of claim 42, wherein said image frequency signal includes a signal at approximately 142 MHz and said signal of interest includes a signal at approximately 130 MHz.

44. The method of claim 39, wherein said mixing provides at least 20 dB of signal rejection with respect to said image frequency signal.

45. The method of claim 39, wherein said frequency converted signal of interest has a signal to noise and distortion of at least 20 dB.

46. A method for providing tuning of a forward data channel approximately 20 dB down from a forward application terminal signal in a signal stream, said method comprising:

filtering said signal stream to provide approximately 20 dB of filtering of said forward application terminal; and

mixing said filtered signal stream using an image reject mixer to provide a frequency converted said forward data channel substantially without said forward application terminal signal.

47. The method of claim 46, wherein said filtering comprises:

coarsely filtering said signal stream using a first first order filter; and less coarsely filtering said signal stream using a second first order filter.

48. The method of claim 46, wherein at least a portion of said forward application terminal signal is offset from said forward data channel by approximately a 10% frequency difference.